

included in the course of the electric current contributing to the final effect; and it is because the ordinary chemical affinity is relieved, weakened, or partly neutralised by the influence of the electric current in one direction parallel to the course of the latter, and strengthened or added to in the opposite direction, that the combining particles have a tendency to pass in opposite courses.

255. In this view the effect is considered as *essentially dependent* upon the *mutual chemical affinity* of the particles of opposite kinds. Particles *a*, fig. 13, could not be transferred or travel from one pole N towards the other P, unless they found particles of the opposite kind *b*, ready to pass in the contrary direction: for it is by virtue of their increased affinity for those particles, combined with their diminished affinity for such as are behind them in their course, that they are urged forward: and when any one particle *a*, fig. 14, arrives at the pole, it is excluded or set free, because the particle *b* of the opposite kind, with which it was the moment before in combi-

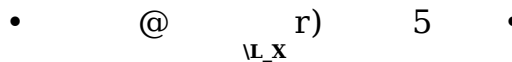


Fig. 13.

Fig. 14.

nation, has, under the superinducing influence of the current, a greater attraction for the particle *a*, which is before it in its course, than for the particle *a*, towards which its affinity has been weakened.

256. As far as regards any single compound particle, the case may be considered as analogous to one of ordinary decomposition, for in fig. 14, *a* may be conceived to be expelled from the compound *a b* by the superior attraction of *a* for *b*, that superior attraction belonging to it in consequence of the relative position of *a b* and *a* to the direction of the axis of electric power (253) superinduced by the current. But as all the compound particles in the course of the current, except those actually in contact with the poles, act conjointly, and consist of elementary particles, which, whilst they are in one direction expelling, are in the other being expelled, the case becomes more complicated, but not more difficult of comprehension.

257. It is not here assumed that the

acting particles must be  
in a right line between the poles. The  
lines of action which may  
be supposed to represent the electric  
currents passing through  
a decomposing liquid, have in many  
experiments very irregular